



Stakeholder Consultation on the Strategy for Research and Innovation activities in the Horizon 2020 Work Programme for

***Nanotechnologies, Advanced Materials, Biotechnology, and
Advanced Manufacturing and Processing (NMBP)***

Date: 15/03/2016

Research and
Innovation

The European Commission is starting to prepare the strategy for the next Horizon 2020 Work Programme, to cover the period 2018-2020.

The Horizon 2020 Specific Programme (Annex I) sets the scope and content for the implementation of the Framework Programme for Research and Innovation (2014-2020). It provides the legal base and determines the specific objectives for Union support to the research and innovation activities for each part or challenge of Horizon 2020. On this basis, the Commission services prepare multiannual work programmes.

Leadership in Enabling and Industrial Technologies (LEIT) includes the parts of Horizon 2020 focusing on Key Enabling Technologies (KETs), ICT and Space. The objective is ‘to maintain and build global leadership through research and innovation in enabling technologies and space, which underpin competitiveness across a range of existing and emerging industries and sectors’. This is to be achieved by ‘the successful mastering, integration and deployment of enabling technologies by European industry’.

This consultation covers the LEIT-NMBP part, which provides direct support for four of the six KETs: *Nanotechnologies*, *Advanced Materials*, *Biotechnology*, and *Advanced Manufacturing and Processing*. NMBP focuses on bringing technologies closer to applications and the markets, notably by supporting pilot lines and demonstration activities. In this way, it addresses EU industrial policy goals as well as several societal challenges.

One of the key concepts is the support for ‘cross-cutting KETs’, activities that bring together different KETs and have the potential to lead to unforeseen advances and new markets and goods. In the next Work Programme, a more integrated approach is expected, particularly important for ‘focus areas’ that cut across different parts of Horizon 2020, and for linking key enabling technologies to their applications in addressing societal challenges.

Since the adoption of Horizon 2020, the socio-economic and policy context has been changing (please see ‘Broader Policy context for 2018-2020’ below). For LEIT-NMBP, the budget to be allocated in 2018-20 will be around €1.8 billion. The responsibility is great, hence the decision to launch a new consultation of stakeholders, to ensure that Horizon 2020 delivers on the most pressing needs for research and innovation in the final programming period.

On the basis of the priorities identified, the outcome of this consultation and the findings in the interim evaluation of Horizon 2020, the Commission expects to develop the strategy of the 2018-2020 Work Programme in the course of 2016, and the content in the course of 2017.

Please consider the following questions, citing any available evidence such as foresight and other assessments of research and innovation trends and market opportunities:

Please consider the four areas of NMBP, depending on your expertise: Nanotechnologies, Advanced Materials, Biotechnology, and Advanced Manufacturing and Processing. Please include any links to the societal challenges addressed in Horizon 2020, which you consider important.

The first four of these questions are common to all parts of Horizon 2020.

- 1) What are the challenges in the field concerned that require action under the Work Programme 2018-2020? And would they require an integrated approach across the societal challenges and leadership in enabling and industrial technologies?

Please help us establish strategic approaches with your answers to this question. The Work Programme topics will be developed from detailed industrial roadmaps in nine areas.¹

- 2) What is the output / impact that could be foreseen? Which innovation aspects could reach market deployment within 5-7 years?

How could this benefit industrial leadership and the priorities of the Commission, notably the Digital Single Market and the Energy Union?

- 3) Which gaps (science and technology, innovation, markets, policy) and potential game changers, including the role of the public sector in accelerating changes, need to be taken into account?
- 4) Which areas could benefit from integration of horizontal aspects such as social sciences and humanities, responsible research and innovation, gender aspects, and climate and sustainable development?

¹ The broad areas are:

- (a) The Factories of the Future (FoF) contractual Public-Private Partnership
- (b) The Sustainable Process Industries (SPIRE) contractual Public-Private Partnership
- (c) The Energy-efficient Buildings (EeB) contractual Public-Private Partnership
- (d) Industrial biotechnology
- (e) Nanotechnologies and advanced materials pilot lines for industrial value chains (pilot lines)
- (f) Nanotechnologies and advanced materials for healthcare
- (g) Nanotechnologies and advanced materials for energy applications
- (h) Generic domain for nanotechnologies and advanced materials, including modelling
- (i) Safety assessment for nanotechnologies

- 5) How can the NMBP part address as effectively as possible the emerging supply chains, notably in the context of the 4th industrial revolution, in which the fusion of technologies is blurring the lines between the physical and digital spheres?

*Please send your responses to RTD-NMBP-H2020STAKEHOLDERS@ec.europa.eu.
The consultation will be open until 2 May 2016.*

Broader Policy context for 2018-2020

Although there are positive signs, the EU still has a long way to go before it overcomes the effects of the economic crisis. The high unemployment rate especially amongst young people remains the biggest concern in many Member States. The five-point strategic agenda for the Union in times of change set by the European Council and followed up by the Commission's agenda for jobs, growth, fairness and democratic change is a strong response to the challenges we face. It involves strengthening our global competitiveness, stimulating investments from both public and private sources, promoting growth, and creating new and sustainable jobs.

The Juncker Commission set out ten policy areas on which the EU needs to focus its efforts over the five-year period. This includes maximising the opportunities and assets of the EU by fully exploiting the potential of the single market as well as of international markets, thus delivering benefits for all by promoting a climate of entrepreneurship, job creation and social fairness. Migration is also a policy priority. The 10 Juncker priorities can be found here: http://ec.europa.eu/priorities/index_en.htm

Research and innovation represent major drivers to both stimulate and leverage investment, providing new solutions and the knowledge, which will help to deliver the new Commission's agenda.

Commissioner for Research, Science and Innovation Carlos Moedas has emphasised the importance of 'Open innovation', 'Open science' and of being 'Open to the world'.

Open innovation is characterised by the combined power of ideas and knowledge from different actors (whether private, public or third sector) to create new products and find solutions to societal needs. Open science describes the on-going transitions in the way research is performed, researchers collaborate, knowledge is shared, and science is organised. In general, Horizon 2020 is Open to the world. Challenges in areas like energy, health, food and water are global challenges, and Europe should be leading the way in developing global research and innovation partnerships to address these challenges.

Climate change and sustainable development are important cross-cutting priorities for the whole of Horizon 2020, as evidenced by the expenditure targets linked to these objectives². In an evolving political context – the Juncker Commission's priorities of growth and jobs, the agreement at the climate change conference in Paris in December 2015, the adoption in September 2015 of the UN's 2030 Sustainable Development Agenda with its related Sustainable Development Goals (SDGs), EU policies such as the Commission's new Circular Economy Package or the 2030 Climate and Energy Framework, and the current context of migration – there is a clear and timely political imperative for research and innovation to support and drive forward on these key issues.

² The Horizon 2020 Regulation states: *"Climate action and resource efficiency are mutually reinforcing objectives for achieving sustainable development. The specific objectives relating to both should be complemented through the other specific objectives of Horizon 2020. As a result it is expected that at least 60% of the overall Horizon 2020 budget should be related to sustainable development. It is also expected that climate-related expenditure should exceed 35% of the budget, including mutually compatible measures improving resource efficiency."*

Annex I to this paper is the Specific Programme, where the broad lines of the activities are defined (Introduction to LEIT part, pp. 24-25; LEIT-NMBP part, pp. 26-29).

http://ec.europa.eu/research/participants/data/ref/h2020/legal_basis/sp/h2020-sp_en.pdf

Annex II is the report of a foresight study that reviewed relevant drivers of future change and explored the implications of different future scenarios for the final work programme for 2018-2020 of Horizon 2020.

Report: <http://bookshop.europa.eu/en/strategic-foresight-pbKI0215938/>

Annexes I-III: <http://bookshop.europa.eu/en/foresight-in-support-of-the-3rd-strategic-programme-of-horizon-2020-pbKI0215948/>